Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.   (Currently Amended) A vehicle dynamics control apparatus comprising:

~~sensors that detect~~ at least one sensor configured to detect at least a turning condition and a driving condition of a host vehicle;

~~an actuator that produces~~ at least one actuator configured to produce a yaw moment acting on the host vehicle; and

a control unit configured to be electronically connected to the sensors and the actuator, for enabling vehicle dynamics control, which is initiated for dynamic behavior improvement purposes when the host vehicle's dynamic behavior including at least an actual yaw rate exerted on the host vehicle is deteriorated, and lane deviation prevention control, which is initiated for lane deviation avoidance purposes when a lane-deviation estimate corresponding to a future lateral deviation of the host vehicle from a driving lane exceeds a lane-deviation criterion in absence of a driver's intention for lane changing, the control unit comprising:

(a)   a driving stability decision section that determines a driving stability including a vehicle driveability and a vehicle stability, based on at least the turning condition;

(b)   a yawing-motion control section that controls a yawing motion of the host vehicle by producing the yaw moment corresponding to a final desired yaw moment and acting in a direction that improves the driving stability when the driving stability is deteriorated, the final desired yaw moment being determined to be equal to a controlled variable of the lane deviation prevention control when the vehicle dynamics control is inoperative and determined to be equal to a controlled variable of the vehicle dynamics control when the vehicle dynamics control is operative;

(c)   a lane deviation prevention section that determines, based on the driving condition, a lane-deviation tendency of the host vehicle from the driving lane, and executes the lane deviation prevention control by producing the yaw moment corresponding to the

controlled variable of the lane deviation prevention control and acting in a direction that lane deviation is prevented; and

(d)   a driving stability decision compensation section that compensates for a decision of the driving stability, based on the controlled variable of the lane deviation prevention control.

2.   (Previously Presented) The vehicle dynamics control apparatus as claimed in claim 1, wherein:

the driving stability decision section determines the driving stability based on at least one of a yaw-rate deviation between the actual yaw rate resulting from the yaw moment acting on the host vehicle and a final desired yaw rate estimated based on a steer angle and a host vehicle speed, a sideslip angle of the host vehicle, and a rate of change of the sideslip angle.

3.   (Previously Presented) The vehicle dynamics control apparatus as claimed in claim 1, wherein:

the driving stability decision section determines the driving stability based on at least one of a yaw-rate deviation between the actual yaw rate resulting from the yaw moment acting on a host vehicle and a final desired yaw rate estimated based on a steer angle and a host vehicle speed, a sideslip-angle deviation between an actual sideslip angle of the host vehicle and the desired sideslip angle estimated based on the host vehicle speed, the steer angle, and a road-surface friction coefficient, and a rate of change of the sideslip-angle deviation.

4.   (Previously Presented) The vehicle dynamics control apparatus as claimed in claim 1, wherein:

the driving stability decision compensation section compensates for the decision of the driving stability by changing a criterion, which is used to determine the driving stability, based on the controlled variable of the lane deviation prevention control, ~~only~~ when the lane deviation prevention section is executing the lane deviation prevention control.

5.   (Currently Amended) A vehicle dynamics control apparatus comprising:

~~sensors that detect~~ <u>at least one sensor configured to detect</u> at least an actual yaw rate, a yaw angle, a host vehicle speed, and a steer angle;

~~an actuator that produces~~ <u>at least one actuator configured to produce</u> a yaw moment acting on the host vehicle; and

a control unit configured to be electronically connected to the sensors and the actuator, for enabling vehicle dynamics control, which is initiated for dynamic behavior improvement purposes when the host vehicle's dynamic behavior including at least the actual yaw rate exerted on the host vehicle is deteriorated, and lane deviation prevention control, which is initiated for lane deviation avoidance purposes when a lane-deviation estimate corresponding to a future lateral deviation of the host vehicle from a driving lane exceeds a lane-deviation criterion in absence of a driver's intention for lane changing, the control unit comprising:

(a)   a desired yaw rate calculation section that calculates a desired yaw rate based on at least the host vehicle speed and the steer angle;

(b)   a driving stability decision section that determines a driving stability including a vehicle driveability and a vehicle stability, based on at least a yaw-rate deviation between the actual yaw rate and a final desired yaw rate;

(c)   a yawing-motion control section that controls a yawing motion of the host vehicle by producing the yaw moment corresponding to a final desired yaw moment and acting in a direction that improves the driving stability when the driving stability is deteriorated, the final desired yaw moment being determined to be equal to a controlled variable of the lane deviation prevention control when the vehicle dynamics control is inoperative and determined to be equal to a controlled variable of the vehicle dynamics control when the vehicle dynamics control is operative;

(d)   a lane deviation prevention section that determines, based on at least the host vehicle speed and the yaw angle, a lane-deviation tendency of the host vehicle from the driving lane, and executes the lane deviation prevention control by producing the yaw moment corresponding to the controlled variable of the lane deviation prevention control and acting in a direction that lane deviation is prevented; and

(e)   a desired yaw rate compensation section that compensates for the desired yaw rate based on the controlled variable of the lane deviation prevention control to produce the final desired yaw rate.

6.   (Currently Amended) A vehicle dynamics control apparatus comprising:

~~sensors that detect~~ at least one sensor configured to detect at least an actual yaw rate, a yaw angle, a host vehicle speed, and a steer angle;

~~an actuator that produces~~ at least one actuator configured to produce a yaw moment acting on the host vehicle; and

a control unit configured to be electronically connected to the sensors and the actuator, for enabling vehicle dynamics control and lane deviation prevention control, the control unit comprising:

(a)   a lane deviation prevention section that determines, based on at least the host vehicle speed and the yaw angle, a lane-deviation tendency of the host vehicle from a driving lane, and executes the lane deviation prevention control by producing the yaw moment corresponding to a controlled variable of the lane deviation prevention control and acting in a direction that lane deviation is prevented;

(b)   an equivalent steer angle calculation section that calculates an equivalent steer angle equivalent to the controlled variable of the lane deviation prevention control;

(c)   a steer-angle correction value calculation section that calculates a steer-angle correction value by adding the equivalent steer angle to the steer angle;

(d)   a desired yaw rate calculation section that calculates a final desired yaw rate based on the steer-angle correction value;

(e)   a driving stability decision section that determines a driving stability including a vehicle driveability and a vehicle stability, based on at least a yaw-rate deviation between the actual yaw rate and the final desired yaw rate; and

(f)   a yawing-motion control section that controls a yawing motion of the host vehicle by producing the yaw moment corresponding to a final desired yaw moment and

acting in a direction that improves the driving stability when the driving stability is deteriorated, the final desired yaw moment being determined to be equal to the controlled variable of the lane deviation prevention control when the vehicle dynamics control is inoperative and determined to be equal to a controlled variable of the vehicle dynamics control when the vehicle dynamics control is operative.

7.   (Previously Presented) The vehicle dynamics control apparatus as claimed in claim 1, wherein:

the lane deviation prevention section estimates the lane-deviation estimate corresponding to the future lateral deviation of the host vehicle from the driving lane, based on at least a host vehicle speed, a yaw angle of the host vehicle with respect to a direction of the driving lane, a lateral deviation of the host vehicle from the driving lane, and a curvature of the driving lane, and estimates both of a lane-deviation direction and a possibility of lane deviation, based on a comparison result of the lane-deviation estimate and the lane-deviation criterion, and determines that there is a possibility for the host vehicle to deviate from the driving lane when the lane-deviation estimate exceeds the lane-deviation criterion.

8.   (Original) The vehicle dynamics control apparatus as claimed in claim 1, wherein:

the yawing-motion control section comprises a braking-and-driving force control section being configured to be electronically connected to the actuator so that braking forces of each of road wheels are automatically controlled independently of each other regardless of a driver's braking action.

9.   (Original) The vehicle dynamics control apparatus as claimed in claim 1, wherein:

the yawing-motion control section is configured to be electronically connected to the actuator so that the yaw moment is produced in a direction that ensures easy change of vehicle heading when the driving stability decision section determines that the vehicle driveability is deteriorated, and that the yaw moment is produced in a direction that improves the vehicle stability when the driving stability decision section determines that the vehicle stability is deteriorated.

10.   (Currently Amended) The vehicle dynamics control apparatus as claimed in claim 1, wherein:

the lane deviation prevention section estimates the lane-deviation estimate corresponding to the future lateral deviation of the host vehicle from the driving lane, based on at least a host vehicle speed, a yaw angle of the host vehicle with respect to a direction of the driving lane, a lateral deviation of the host vehicle from the driving lane, and a curvature of the driving lane, and calculates a desired yaw moment corresponding to the controlled variable of the lane deviation prevention control, based on a deviation of the lane-deviation estimate and [[a]] the lane-deviation criterion, and determines a braking force and a driving force of each of the road wheels, based on the desired yaw moment corresponding to the controlled variable of the lane deviation prevention control.

11.   (Currently Amended) A vehicle dynamics control apparatus comprising:

sensors that detect at least one sensor configured to detect at least a turning condition and a driving condition of a host vehicle;

an actuator that produces at least one actuator configured to produce a yaw moment acting on the host vehicle; and

a control unit configured to be electronically connected to the sensors and the actuator, for enabling vehicle dynamics control and lane deviation prevention control, the control unit comprising a processor programmed to perform the following,

(a)   determining a driving stability including a vehicle driveability and a vehicle stability, based on at least the turning condition;

(b)   executing the vehicle dynamics control by producing the yaw moment corresponding to a controlled variable of the vehicle dynamics control that improves the driving stability when the driving stability is deteriorated;

(c)   executing the lane deviation prevention control by producing the yaw moment corresponding to a controlled variable of the lane deviation prevention control that prevents acts to prevent lane deviation; and

(d)   ~~softening~~ <u>compensating for</u> a <u>driving-stability</u> criterion, which is used to determine ~~the driving stability~~ <u>execution of the vehicle dynamics control</u>, based on the controlled variable of the lane deviation prevention control <u>so as to hold the vehicle dynamics control inoperative</u>, ~~only~~ when the vehicle dynamics control is inoperative.

12.   (Currently Amended) The vehicle dynamics control <u>apparatus</u> as claimed in . claim 11, wherein the processor is further programmed for:

(e)   estimating a yaw-rate deviation between an actual yaw rate resulting from the yaw moment acting on the host vehicle and a final desired yaw rate estimated based on a steer angle and a host vehicle speed;

(f)   comparing the yaw-rate deviation to a yaw-rate-deviation threshold value; and

(g)   initiating the vehicle dynamics control when the yaw-rate deviation exceeds the yaw-rate-deviation threshold value ~~under a condition where the vehicle dynamics control is inoperative~~; and

wherein ~~softening~~ <u>compensating for</u> the <u>driving-stability</u> criterion ~~of the driving stability~~ is achieved by ~~decreasingly compensating for~~ <u>decreasing</u> the yaw-rate deviation based on the controlled variable of the lane deviation prevention control.

13.   (Currently Amended) The vehicle dynamics control <u>apparatus</u> as claimed in claim 11, wherein the processor is further programmed for:

(e)   estimating a yaw-rate deviation between an actual yaw rate resulting from the yaw moment acting on the host vehicle and a final desired yaw rate estimated based on a steer angle and a host vehicle speed;

(f)   comparing the yaw-rate deviation to a yaw-rate-deviation threshold value; and

(g)   initiating the vehicle dynamics control when the yaw-rate deviation exceeds the yaw-rate-deviation threshold value ~~under a condition where the vehicle dynamics control is inoperative~~; and

wherein ~~softening~~ compensating for the driving-stability criterion ~~of the driving stability~~ is achieved by ~~increasingly compensating for~~ increasing the yaw-rate-deviation threshold value based on the controlled variable of the lane deviation prevention control.

14.   (Currently Amended) The vehicle dynamics control apparatus as claimed in claim 13, wherein:

the yaw-rate-deviation threshold value is fixed to a predetermined low threshold value in a small desired yaw moment range less than or equal to a predetermined small controlled variable, and gradually increases to a predetermined high threshold value as the controlled variable of the lane deviation prevention control increases in a middle and high desired yaw moment range from the predetermined small controlled variable to a predetermined high controlled variable, and is fixed to the predetermined high threshold value in an excessively high desired yaw moment range above the predetermined high controlled variable.

15.   (Currently Amended) The vehicle dynamics control apparatus as claimed in claim 11, wherein the processor is further programmed for:

(e)   calculating a desired yaw rate based on at least ~~a~~ the host vehicle speed and ~~a~~ the steer angle; and

wherein ~~softening~~ compensating for the driving-stability criterion ~~of the driving stability~~ is achieved by compensating for the desired yaw rate based on the controlled variable of the lane deviation prevention control to produce ~~a~~ the final desired yaw rate and by ~~decreasingly~~ compensating for ~~a~~ the yaw-rate deviation between the final desired yaw rate and ~~an~~ the actual yaw rate resulting from the yaw moment acting on the host vehicle.

16.   (Currently Amended) The vehicle dynamics control apparatus as claimed in claim 11, wherein the processor is further programmed for:

(e)   calculating an equivalent steer angle equivalent to the controlled variable of the lane deviation prevention control; and

wherein ~~softening~~ compensating for the driving-stability criterion ~~of the driving stability~~ is achieved by calculating a steer-angle correction value as a sum of the equivalent steer angle and ~~a~~ the steer angle, and by calculating ~~a~~ the final desired yaw rate based on the

steer-angle correction value, and by ~~decreasingly~~ compensating for ~~a~~ the yaw-rate deviation between the final desired yaw rate and ~~an~~ the actual yaw rate resulting from the yaw moment acting on the host vehicle.

17.   (Previously Presented) A method of balancing a vehicle dynamics control system and a lane deviation prevention control system, the method comprising:

detecting at least a turning condition and a driving condition of a host vehicle;

determining a driving stability including a vehicle driveability and a vehicle stability, based on at least the turning condition;

controlling a yawing motion of the host vehicle by producing a yaw moment corresponding to a final desired yaw moment and acting on the host vehicle in a direction that improves the driving stability when the driving stability is deteriorated;

selecting a controlled variable of lane deviation prevention control, which is initiated for lane deviation avoidance purposes when a lane-deviation estimate corresponding to a future lateral deviation of the host vehicle from a driving lane exceeds a lane-deviation criterion in absence of a driver's intention for lane changing, as the final desired yaw moment when vehicle dynamics control is inoperative;

selecting a controlled variable of vehicle dynamics control, which is initiated for dynamic behavior improvement purposes when the host vehicle's dynamic behavior including at least the actual yaw rate exerted on the host vehicle is deteriorated, as the final desired yaw moment when the vehicle dynamics control is operative;

determining, based on the driving condition, a lane-deviation tendency of the host vehicle from the driving lane;

executing the lane deviation prevention control by producing a yaw moment corresponding to the controlled variable of the lane deviation prevention control and acting on the host vehicle in a direction that lane deviation is prevented; and

compensating for a decision of the driving stability, based on the controlled variable of the lane deviation prevention control.

18.   (Currently amended)   A method of balancing a vehicle dynamics control system and a lane deviation prevention control system, the method comprising:

detecting at least a turning condition and a driving condition of a host vehicle;

determining a driving stability including a vehicle driveability and a vehicle stability, based on at least the turning condition;

executing vehicle dynamics control by producing a yaw moment corresponding to a controlled variable of the vehicle dynamics control that improves the driving stability when the driving stability is deteriorated;

executing lane deviation prevention control by producing a yaw moment corresponding to a controlled variable of the lane deviation prevention control that acts to prevents lane deviation; and

softening compensating for a driving-stability criterion, which is used to determine the driving stability execution of the vehicle dynamics control, based on the controlled variable of the lane deviation prevention control so as to hold the vehicle dynamics control inoperative, only when the vehicle dynamics control is inoperative.

19.   (Currently Amended) The method as claimed in claim 18, further comprising:

estimating a yaw-rate deviation between an actual yaw rate resulting from the yaw moment acting on the host vehicle and a final desired yaw rate estimated based on a steer angle and a host vehicle speed;

comparing the yaw-rate deviation to a yaw-rate-deviation threshold value; and

initiating the vehicle dynamics control when the yaw-rate deviation exceeds the yaw-rate-deviation threshold value under a condition where the vehicle dynamics control is inoperative; and

wherein softening compensating for the driving-stability criterion of the driving stability is achieved by decreasingly compensating for decreasing the yaw-rate deviation based on the controlled variable of the lane deviation prevention control.

20.   (Currently Amended) The method as claimed in claim 18, further comprising:

estimating a yaw-rate deviation between an actual yaw rate resulting from the yaw moment acting on the host vehicle and a final desired yaw rate estimated based on a steer angle and a host vehicle speed;

comparing the yaw-rate deviation to a yaw-rate-deviation threshold value; and

initiating the vehicle dynamics control when the yaw-rate deviation exceeds the yaw-rate-deviation threshold value under a condition where the vehicle dynamics control is inoperative; and

wherein softening compensating for the driving-stability criterion of the driving stability is achieved by increasingly compensating for increasing the yaw-rate-deviation threshold value based on the controlled variable of the lane deviation prevention control.

21.   (Currently Amended) The method as claimed in claim 18, further comprising:

calculating a desired yaw rate based on at least a the host vehicle speed and a the steer angle; and

wherein softening compensating for the driving-stability criterion of the driving stability is achieved by compensating for the desired yaw rate based on the controlled variable of the lane deviation prevention control to produce a the final desired yaw rate and by decreasingly compensating for a the yaw-rate deviation between the final desired yaw rate and an the actual yaw rate resulting from the yaw moment acting on the host vehicle.

22.   (Currently Amended) The method as claimed in claim 18, further comprising:

calculating an equivalent steer angle equivalent to the controlled variable of the lane deviation prevention control; and

wherein softening compensating for the driving-stability criterion of the driving stability is achieved by calculating a steer-angle correction value as a sum of the equivalent steer angle and a the steer angle, and by calculating a the final desired yaw rate based on the steer-angle correction value, and by decreasingly compensating for a the yaw-rate deviation

between the final desired yaw rate and ~~an~~ the actual yaw rate resulting from the yaw moment acting on the host vehicle.

23.   (Previously Presented) A vehicle dynamics control apparatus comprising:

sensor means for detecting at least a turning condition and a driving condition of a host vehicle;

actuating means for producing a yaw moment acting on the host vehicle; and

a control unit configured to be electronically connected to the sensor means and the actuating means, for enabling vehicle dynamics control, which is initiated for dynamic behavior improvement purposes when the host vehicle's dynamic behavior including at least an actual yaw rate exerted on the host vehicle is deteriorated, and lane deviation prevention control, which is initiated for lane deviation avoidance purposes when a lane-deviation estimate corresponding to a future lateral deviation of the host vehicle from a driving lane exceeds a lane-deviation criterion in absence of a driver's intention for lane changing, the control unit comprising:

(a)   a driving stability decision means for determining a driving stability including a vehicle driveability and a vehicle stability, based on at least the turning condition;

(b)   a yawing-motion control means for controlling a yawing motion of the host vehicle by producing the yaw moment corresponding to a final desired yaw moment and acting in a direction that improves the driving stability when the driving stability is deteriorated, the final desired yaw moment being determined to be equal to a controlled variable of the lane deviation prevention control when the vehicle dynamics control is inoperative and determined to be equal to a controlled variable of the vehicle dynamics control when the vehicle dynamics control is operative;

(c)   a lane deviation prevention means for determining, based on the driving condition, a lane-deviation tendency of the host vehicle from a driving lane, and executes the lane deviation prevention control by producing the yaw moment corresponding to the controlled variable of the lane deviation prevention control and acting in a direction that lane deviation is prevented; and

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(d)   a driving stability decision compensation means for compensating for a decision of the driving stability, based on the controlled variable of the lane deviation prevention control.

24.   (Currently Amended) A vehicle dynamics control apparatus comprising:

sensor means for detecting at least a turning condition and a driving condition of a host vehicle;

actuating means for producing a yaw moment acting on the host vehicle; and

control means configured to be electronically connected to the sensor means and the actuating means, for enabling vehicle dynamics control and lane deviation prevention control, the control means comprising a processor programmed to perform the following,

(a)   determining a driving stability including a vehicle driveability and a vehicle stability, based on at least the turning condition;

(b)   executing the vehicle dynamics control by producing the yaw moment corresponding to a controlled variable of the vehicle dynamics control that improves the driving stability when the driving stability is deteriorated;

(c)   executing the lane deviation prevention control by producing the yaw moment corresponding to a controlled variable of the lane deviation prevention control that ~~prevents~~ acts to prevent lane deviation; and

(d)   ~~softening~~ compensating for a driving-stability criterion, which is used to determine ~~the driving stability~~ execution of the vehicle dynamics control, based on the controlled variable of the lane deviation prevention control so as to hold the vehicle dynamics control inoperative, ~~only~~ when the vehicle dynamics control is inoperative.

25.   (Canceled)